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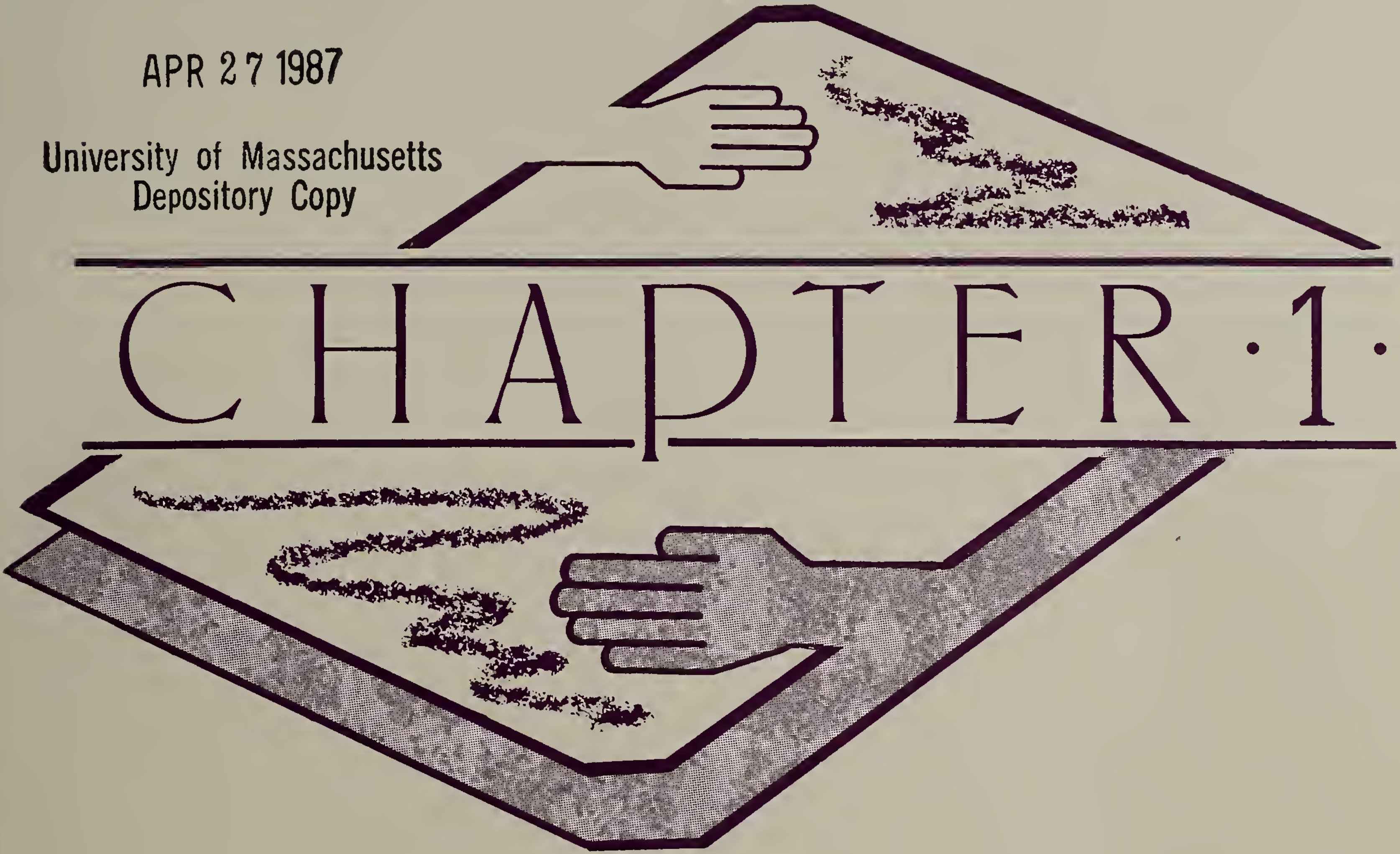

CHAPTER 1

ANNUAL EVALUATION REPORT

Fiscal Year 1984

The Commonwealth of Massachusetts
Department of Education

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INTRODUCTION

Fiscal Year 1984 marks the second year in which federally funded compensatory education operated under Chapter 1 of the Education Consolidation and Improvement Act of 1981 (ECIA) enacted as part of Subtitle D of Title V of the Omnibus Budget Reconciliation Act of 1981, P.L. 97-35. Chapter 1 ECIA replaced Title I of the Elementary and Secondary Education Act as the federal legislation providing financial assistance to state and local education agencies to meet the educational needs of educationally deprived students.

Fiscal year 1984 also marks the fifth year in which Massachusetts federally funded compensatory education programs have used the Title I Evaluation and Reporting System (TIERS) on a statewide basis. This system was developed by the U.S. Department of Education to collect and aggregate uniform data on levels of participation, parent activities, staffing and project impact on achievement test scores at the local, state and federal levels. Although evaluation requirements under Chapter 1, ECIA do not prescribe this reporting system for state and local Chapter 1 programs, Massachusetts continues to employ it in order to obtain a systematic and valid assessment of Chapter 1 services and their impact.

Except for the first section on LEA participation and funding, all data presented in this report are based on a stratified random sample of 95 regular school year projects reporting in FY '84. All statewide totals are estimates calculated by multiplying the sample results (excluding Boston) by 3.126 (3x99/95). The results for Boston were then added to obtain the final statewide estimates for totals. All statewide averages are estimates based on the sample data collected.

LEA PARTICIPATION AND FUNDING

PARTICIPATION OF MASSACHUSETTS LOCAL EDUCATIONAL AGENCIES

TABLE 1

NUMBER AND TYPE OF LOCAL EDUCATIONAL AGENCIES WITH CHAPTER 1 PROGRAMS

	Local	Regional	Vocational-Technical	*Other	TOTAL
Total Number of LEAs Which Operated Chapter 1 Programs	292	31	14	1	338
Number of LEAs Which Did Not Operate Chapter 1 Programs	4	21	13	5	43
Total Number of LEAs In Massachusetts	296	52	27	6	381

* Includes three Independent Vocational School Systems and three County Agricultural Schools

TABLE 1 shows the number of Massachusetts school districts which conducted Chapter 1 programs in Fiscal Year (FY) 1984. Almost all eligible local school districts utilized their Chapter 1 entitlement, while only 31 of the 52 regional school districts and only 14 of the 27 vocational-technical schools chose to operate a Chapter 1 program. Of the 381 school districts, 338 (89%) had Chapter 1 programs.

The actual number of Chapter 1 programs operating in FY84 was less than 338. This occurred because 78 school districts participated in 18 cooperative Chapter 1 programs. Thus, there were 278 (338-78+18) actual Chapter 1 programs in Massachusetts during FY84.

ALLOCATIONS BY COUNTY

Allocation to each county is based on the number of low-income children, ages 5-17. Approximately one-fifth of the state's total grant was earmarked for Suffolk County—Boston, Chelsea, Revere and Winthrop. In addition, 16% of the statewide allocation was targeted for Middlesex County. This county includes Cambridge, Everett, Lowell, Malden and Somerville. TABLE 2 shows the allocation of Chapter 1 funds by county.

TABLE 2
ALLOCATION OF CHAPTER 1 FUNDS

County	Allocation
Barnstable	$ 1,301,738
Berkshire	1,446,874
Bristol	5,981,241
Dukes	70,466
Essex	6,818,906
Franklin	657,540
Hampden	6,922,729
Hampshire	927,311
Middlesex	9,518,700
Nantucket	33,245
Norfolk	3,608,758
Plymouth	4,249,621
Suffolk	12,833,087
Worcester	6,752,610
TOTAL	**$61,122,826**

BASIC DESCRIPTION OF CHAPTER 1 PROGRAMS

STUDENT PARTICIPATION

The number and percent of students served within Chapter 1 programs in both public and non-public schools is shown in TABLE 3. The concentration of students was in grades 1-6. These grades accounted for 66,646 (68%) of the total Chapter 1 student population. Pre-kindergarten and kindergarten programs accounted for 7,981 students or 8% of the total population, while 23,407 students (24%) were in secondary level Chapter 1 programs (grades 7-12).

The distribution across grades for both public and non-public programs was essentially the same. The percentage of students in grades 1-6 was slightly higher in non-public schools, and there were relatively more public school students in grades 7-12. Overall, 91% of the total number of chapter 1 students were served in the public schools and the remaining 9% within non-public schools.

TABLE 3
NUMBER AND PERCENT OF STUDENTS SERVED BY CHAPTER 1 AT EACH GRADE LEVEL

Grade Level	Public Schools		Non-Public Schools		Total	
	Number	Percent	Number	Percent	Number	Percent
Pre-Kindergarten	2,041	2.3	0	0.0	2,041	2.1
Kindergarten	5,474	6.2	466	5.1	5,940	6.1
Grade 1	11,896	13.4	1,464	15.9	13,360	13.6
Grade 2	10,686	12.0	1,502	16.3	12,188	12.4
Grade 3	10,011	11.3	1,417	15.4	11,428	11.7
Grade 4	9,413	10.6	1,170	12.7	10,583	10.8
Grade 5	8,834	9.9	1,010	11.0	9,844	10.0
Grade 6	8,418	9.5	825	9.0	9,243	9.4
Grade 7	7,571	8.5	625	6.8	8,196	8.4
Grade 8	6,414	7.2	512	5.6	6,926	7.1
Grade 9	3,614	4.1	47	0.5	3,661	3.7
Grade 10	2,235	2.5	51	0.6	2,286	2.3
Grade 11	1,335	1.5	56	0.6	1,391	1.4
Grade 12	885	1.0	62	0.7	947	1.0
TOTAL (unduplicated count)	88,827	100.0	9,207	100.0	98,034	100.0

CHAPTER 1 SERVICES PROVIDED TO STUDENTS

The number of students receiving various types of instructional and supportive services is shown in TABLE 4. These numbers are also presented as percentages of the total of 98,034 students served. The most widely offered Chapter 1 service clearly was reading. Reading services were received by 76% of all participating students. Reading was followed by other language arts (26.1%), and mathematics (23.7%).

TABLE 4
NUMBER OF STUDENTS SERVED BY CHAPTER 1 IN EACH SERVICE AREA

Types of Services	Total Number of Students Served	Percent of Students Served
INSTRUCTIONAL		
Reading	74,471	76.0
Mathematics	23,210	23.7
Other Language Arts	25,609	26.1
English-as-a-Second-Language	1,488	1.5
Other Instructional Services	2,972	3.0
SUPPORTIVE SERVICES		
Health and Nutrition	1,991	2.0
Social and Emotional Development	4,229	4.3
Pupil Transportation	1,266	1.3
Other Support Services	7,015	7.2

TYPE OF STAFF

TABLE 5 shows the amount and percentage of full-time equivalent staff employed in Chapter 1 programs during the regular school term. The vast majority of staff time in Chapter 1 programs (over 86%) can be accounted for by teachers and teacher-aides. In contrast, only 3.2% of Chapter 1 staff time was accounted for by administrative staff.

TABLE 5

NUMBER OF STAFF (in FTE's) EMPLOYED IN CHAPTER 1 PROJECTS IN EACH JOB CLASSIFICATION

Job Classification	Full-Time Equivalent	Percentage
Teachers	2,251	55.5
Teacher-Aides	1,272	31.4
Administrative Staff	131	3.2
Clerical Staff	140	3.5
Staff Providing Supportive Services	91	2.3
Curriculum Specialists	25	0.6
Parent Coordinators	33	0.8
Others (Dissemination Staff etc.)	113	2.7
TOTAL	**4,056**	**100.0**

CHAPTER 1 STAFF TRAINING PROGRAMS

During FY84, 4,735 staff members received Chapter 1 funded training. Of these, TABLE 6 indicates that 3,535 were Chapter 1 staff and 1,200 were *not* Chapter 1 personnel. The vast majority of individuals (90%) receiving training were teachers and aides. Note that Table 6 presents results based on numbers of staff whereas Table 5 presents results based on full-time equivalents.

TABLE 6

NUMBER OF CHAPTER 1 AND NON-CHAPTER 1 STAFF IN EACH JOB CLASSIFICATION WHO RECEIVED CHAPTER 1 FUNDED TRAINING

Job Classification	**Chapter 1 Staff**	**Non-Chapter 1 Staff**	**Total**
Teachers	2,093	678	2,771
Teacher-Aides	1,175	316	1,491
Administrative Staff	163	153	316
Curriculum Specialists	19	25	44
OTHER	85	28	113
TOTAL	**3,535**	**1,200**	4,735

PARENT INVOLVEMENT

The total number of Chapter 1 parents who were elected members of parent advisory councils (PACs) during FY84 was 2,901. Table 7 shows that the majority (87%) were parents of public school students.

Local education agencies were asked to report the number of Chapter 1 parents participating in three different types of PAC activities during FY84. TABLE 8 contains the statewide summary of these data. Participation in project planning, implementation and/or evaluation was far greater than participation in the other two types of activities. The average attendance at PAC meetings across the state was 9 persons per meeting.

TABLE 7
CHAPTER 1 PARENT PARTICIPATION IN PACs

Types of PAC Members	Number	Percentage
Parents-Public School	2,519	86.8
Parents-Nonpublic Schools	382	13.2
Total Number of Parent PAC Members	2,901	100.0

TABLE 8
CHAPTER 1 PARENT PARTICIPATION IN PAC ACTIVITIES

Types of PAC Sponsored Activity	Number of Chapter 1 Parents Participating
Project planning, implementation and/or evaluation	4,505
Volunteered in activities outside of Chapter 1 classroom	525
Volunteered in Chapter 1 classroom activities	1,097

EFFECT ON EDUCATIONAL ACHIEVEMENT

OVERVIEW

As stated earlier in the Introduction to this report, the Title I Evaluation and Reporting System (TIERS) was designed to aggregate achievement test results for Chapter 1 students in grades 2-12 in the three basic skills areas: reading, mathematics and language arts. A Chapter 1 program may continue to utilize one of three basic evaluation designs to measure the impact of the program on their students. The three basic evaluation designs are:

(1) *MODEL A:* the Norm-Referenced Model
(2) *MODEL B:* the Comparison Group Model
(3) *MODEL* C: the Special Regression Model

The three evaluation models utilize a common definition of project impact in measuring the effectiveness of a Chapter 1 program in improving student achievement. The impact attributed to the Chatper 1 program is defined as the difference between student performance on a post-test and an estimate of what this performance would have been had the students not participated in the Chapter 1 program. In brief, the project's overall impact is defined as the post-test performance minus the expected no-project performance.

	OBSERVED		EXPECTED
PROJECT IMPACT =	**Post-Project**	**—**	**No-Project**
	Performance		**Performance**

For all three evaluation models, the observed post-project performance is always the average post-test score of the project's Chapter 1 students. The expected no-project performance is derived differently in each of the three designs.

THE NORM-REFERENCED DESIGN: MODEL A

All of the Chapter 1 programs reporting achievement data in the FY84 sample employed the Norm-Referenced Model. In the Model A evaluation design, the expected no-project performance is derived through comparisons with the achievement test publisher's national norms. The average pre-test score for the Chapter 1 students is compared to the distribution of scores obtained by the norm group at the same time of the school year. This comparison requires obtaining the percentile rank equivalent of the average pre-test score. It is assumed that the Chapter 1 students would have an average post-test score at the same percentile rank if they had not participated in the project. Thus, the expected no-project performance is the percentile rank of the group's average pre-test score and the observed post-project performance is the percentile rank of the average post-test score. If the percentile rank of the average post-test score is greater than the percentile rank of the average pre-test score, the difference is attributed to the effectiveness of the Chapter 1 program. If the difference is zero or negative, the Chapter 1 program is said to have no positive impact.

REPORTING STATEWIDE RESULTS

The statewide analysis of Chapter 1 impact was carried out by aggregating the impacts or gains, defined above, across all reporting Chapter 1 projects. Since Chapter 1 projects vary in terms of instructional subject areas (reading, language arts, or mathematics) and grades (2-12), separate aggregations were performed within these categories. Also, the test administration schedule for pre- and post-testing may influence the type of results a project can expect to achieve. Therefore, separate aggregations were carried out for Chapter 1 projects using a year-to-year testing schedule and those using a fall-to-spring schedule.

In order to aggregate program impact across Chapter 1 projects, the percentile ranks of the average pre- and post-test scores for each program were converted to an equal-interval scale, known as the Normal Curve Equivalent (NCE). This facilitated the aggregation of results from different programs.

The remainder of this section of the evaluation report presents the aggregated Chapter 1 project impact on student achievement in reading, mathematics, and language arts for grades 2 through 12 in Massachusetts for FY84. Tables 10, 11, 12 and 13 also contain national NCE mean gain (weighted mean) data in the subjects of reading and mathematics.

CHAPTER 1 IMPACT: ACHIEVEMENT TEST RESULTS

TABLE 9 shows the number of Chapter 1 program participants for whom both pre- and post-test achievement test scores were obtained during FY84. The number of participants tested is presented by the three basic skills areas—reading, mathematics, and language arts. In addition, the table breaks these numbers down by the different testing schedules employed to assess program impact.

Overall, the majority of Chapter 1 students tested participated in reading programs (31,389 or 69%). Of these, 82% were tested on a fall-to-spring schedule. Students in mathematics programs accounted for 25% of the students and language arts accounted for only six percent. Most students were tested using fall-to-spring schedules (85%).

TABLE 9

NUMBER OF STUDENTS WITH PRE-TEST AND POST-TEST ACHIEVEMENT TEST SCORES IN SCHOOL YEAR PROJECTS, GRADES 2-12 FOR EACH SUBJECT AREA AND TESTING SCHEDULE

Subject Area	**Testing Schedule**		
	Fall-to-Spring	**Year-to-Year**	**TOTAL**
Reading	25,671	5,718	**31,389**
Mathematics	10,224	1,173	**11,397**
Language Arts	2,517	144	**2,661**
TOTAL	**38,412**	**7,035**	**45,447**

IMPACT OF READING PROGRAMS

The aggregated statewide Chapter 1 impact for students in reading programs is presented in TABLES 10 and 11. TABLE 10 reports these gains for projects which employed a fall-to-spring testing schedule. Projects with a fall-to-spring testing schedule had an average impact of 6.6 NCEs, while those which used a year-to-year schedule averaged 3.3 NCEs. For reading projects using a fall-to-spring testing schedule within Massachusetts, greater than average gains were made in grades 2, 6, and 9. For projects utilizing a year-to-year testing schedule (see TABLE 11), the greater than average gains within Massachusetts were at grades 2, 3, 6, 8, 10, 11 and 12.

Overall, TABLES 10 and 11 show a positive impact of the Chapter 1 reading instruction at almost all grade levels—regardless of the testing schedule employed to assess program effectiveness. The decrease of 1.4 for grade 7 students tested with an annual schedule was influenced by one specific Chapter 1 program with a large number of students. Tables 10 and 11 also contain national NCE gains by grade level. Table 10 shows that Massachusetts Chapter 1 projects had gains greater than national gains in grades 6, 8, 9, 10 and 11. Table 11 shows that Massachusetts Chapter 1 projects had gains greater than national gains in grades 2, 3, 6, 8, 9, 10, 11 and 12.

TABLE 10

READING ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post-Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	4,557	45.2	9.5	9.9
3	4,041	42.6	6.2	8.2
4	3,525	40.7	5.8	7.5
5	3,297	41.7	5.9	6.7
6	3,132	40.6	6.7	6.3
7	2,403	38.3	5.6	5.6
8	1,722	39.0	5.7	5.1
9	1,533	36.6	6.9	5.3
10	783	34.8	4.8	4.5
11	453	30.5	5.6	4.1
12	225	28.1	2.1	4.6
TOTAL	**25,671**	**40.9**	**6.6**	—

TABLE 11

READING ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS WITH YEAR-TO-YEAR TESTING SCHEDULES—EXPRESSED IN NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post-Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	831	41.3	7.2	1.0
3	978	45.5	6.0	3.0
4	672	41.9	1.0	2.9
5	729	41.9	2.6	3.1
6	720	41.7	6.9	3.2
7	1,467	37.4	-1.4	2.5
8	153	56.6	5.5	2.4
9	48	45.2	2.7	1.6
10	66	46.3	5.9	1.1
11	24	43.8	4.4	0.3
12	30	35.9	7.3	0.3
TOTAL	**5,718**	**41.7**	**3.3**	—

IMPACT OF MATHEMATICS PROGRAMS

TABLES 12 and 13 present the aggregated statewide impact of Chapter 1 programs providing supplementary mathematics instruction. TABLE 12 shows NCE gains at all grade levels for programs employing a fall-to-spring testing schedule. The overall NCE mean gain was 11.0 within Massachusetts. Greater than average NCE gains were achieved in grades 2, 3 and 4. TABLE 13 reports aggregated program impact by grade for programs using a year-to-year testing schedule. The average NCE gain of those mathematics programs was 3.5. Within Massachusetts above average gains for year-to-year programs were in grades 6 and 7. Tables 12 and 13 also contain national NCE gains by grade level. Table 12 shows that Massachusetts Chapter 1 projects had gains greater than national gains in grades 2, 3, 4, 5, 6, 7, 8 and 9. Table 13 shows that Massachusetts Chapter 1 projects had gains greater than national gains in grades 4, 6 and 7.

TABLE 12

MATHEMATICS ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post-Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	1,299	49.4	16.1	12.9
3	1,494	49.6	14.7	10.8
4	1,611	48.5	11.8	10.3
5	1,638	47.7	10.9	8.8
6	1,389	44.8	9.2	8.4
7	756	42.3	7.1	6.3
8	621	41.6	7.0	6.0
9	855	33.8	9.9	7.2
10	396	34.3	4.2	4.2
11	108	33.0	2.1	5.9
12	57	42.6	3.0	4.5
TOTAL	**10,224**	**45.3**	**11.0**	—

TABLE 13

MATHEMATICS ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS WITH YEAR-TO-YEAR TESTING SCHEDULES—EXPRESSED IN NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post-Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	177	35.6	3.2	3.2
3	276	36.9	2.5	3.2
4	213	29.8	3.4	3.1
5	237	23.6	2.9	4.4
6	195	43.0	5.9	4.0
7	60	38.6	3.7	3.5
8	15	39.6	1.9	3.1
9				
10				
11				
12				
TOTAL	**1,173**	**33.9**	**3.5**	—

IMPACT OF LANGUAGE ARTS PROGRAMS

TABLE 14 presents the aggregated statewide impact of Chapter 1 programs providing instructional services in language arts. For programs testing fall-to-spring, positive gains were made at all grade levels except 10 and 12. Within Massachusetts above average gains were made at grades 2, 3 and 5. Results for year-to-year testing are not presented due to the small numbers of students involved (less than 100 students at only four grades). National language arts achievement results are not available.

TABLE 14

LANGUAGE ARTS ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post-Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)
2	411	51.1	18.7
3	381	49.7	15.1
4	201	40.1	4.5
5	285	51.0	12.5
6	324	50.0	7.8
7	195	44.1	4.5
8	279	43.9	2.2
9	75	42.0	1.5
10	186	32.3	-1.4
11	138	30.6	0.1
12	42	30.7	-0.8
TOTAL	**2,517**	**45.4**	**8.6**